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ABSTRACT

Attrition, retention, and program completion of doctoral students were studied at a university. One objective was to be able to determine, at the time of admission, which students were most likely to achieve success, defined as degree completion. The subject pool was 168 graduate students admitted to the doctoral program in educational administration for the years 1986-2000. Overall results show that the completion of the ED.S. degree (specialist degree), the Carnegie Classification of the undergraduate institution, and the master's degree grade point average are useful in predicting doctoral degree completion in educational administration. Of these, the most significant predictor was conferral of the specialist degree, and the overall prediction rate dropped slightly when the specialist degree was eliminated from consideration. (Contains 11 tables and 28 references.) (SLD)

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COMPLETION AND ATTRITION RATES OF DOCTORAL STUDENTS IN EDUCATIONAL ADMINISTRATION

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Completion and Attrition Rates of Doctoral Students in Educational Administration

Perspectives and Theoretical Framework

Completion of a doctoral program in educational administration involves intensive study, concentration, and sacrifice. Selection, admission, and enrollment of students into such programs constitute a sizeable investment of university resources in terms of faculty, library holdings, and other support services. Judicious decisions as to the students who are admitted and those who are not are critical to the entire process. Factors that enter into the admissions process of doctoral students must be focused upon the student's ability to complete program requirements and ultimately be awarded the doctoral degree. What factors should be considered?

Common features of a doctoral admissions process include some type of standardized test, e.g., the Graduate Record Examination (GRE), the student's prior academic record, letters of recommendation, previous professional experience, and perhaps some type of writing sample. GRE scores and grade point average (GPA) represent quantitative factors in the decision-making process, but other non-measurable variables may be equally important. Judging a student's ability to complete the doctoral degree may include information that cannot be known until the student progresses through the program, e.g., persistence in achievement, desire. At stake in a sound doctoral admissions model that maximizes student quality and degree completion and reduces the rate of attrition are enhancement of an institution's academic reputation and, of utmost importance for society, preparation of leaders for the educational challenges of the 21st century.

Unfortunately, there is a serious lack of attrition and retention research at the graduate level. Few studies contain an analysis of factors that can be used to predict students who are most likely to be successful, i.e., complete the degree. One of the most recent was a study by Malone, Nelson, and Nelson (2001), but this investigation focused on the prediction of completion of a master's level program. Bowen and Rudenstine wrote, "surprisingly little has been written about the general pattern of [graduate student] completion rates" (p. 107). Isaac (1993) found no national databases and very little institution-specific data on attrition or retention at the graduate level. Most retention studies have been targeted at the undergraduate population, and no equivalent investigations have been made for post-baccalaureate students, especially at the doctoral level (Bowen & Rudenstine, 1992; Gunn & Sanford, 1988; Isaac,

1993). Tinto (1987/1993) offered an important reason why less research on attrition has been conducted at the graduate level than at the undergraduate level. He wrote, "Research on graduate attrition has not been guided either by a comprehensive model or theory of graduate persistence or by the methodological strategies that have been successfully employed in the study of undergraduate persistence" (p. 231).

Other reasons have been given for the dearth of graduate-level attrition and retention studies. Hartnett and Katz (1977) believed that because motivation and task-orientedness could be taken for granted with graduate students, institutions have seen no compelling need to pay much attention to graduate students or the processes by which they become scholars. While this may still be the prevailing attitude nearly a quarter century later, institutions should be concerned about doctoral attrition. In contrast to undergraduate and master's level students, doctoral students more often reflect the scholarly image of the academy (Hartnett & Katz, 1977). Since universities also invest considerable resources in doctoral preparation, attrition has significant implications for efficient use of those resources as well as for individual students (Kluever, 1997; National Science Foundation, 1998).

Researchers that have published studies on doctoral retention have focused on different aspects of the doctoral experience. One of the most critical factors in completing the doctorate is adequately preparing students for research. Brewer, Douglas, Facer, and O'Toole (1999) found that engaging students in research that culminates in scholarly publications and employing productive faculty members are two of the three most important components in training doctoral students for the rigorous inquiry and writing required for the dissertation. In addition, research conducted collaboratively with faculty members not only fosters dissertation progress it decreases the time to degree completion (Nerad & Cerny, 1993). Similarly, Faghihi, Rakow, and Ethington (1999) found that students' relationships with their advisors and committee members in conjunction with their research self-efficacy significantly contributed to doctoral success. Other factors that facilitate doctoral completion are the utilization of faculty as role models and mentors (Baird, 1992; Faghihi, et. al., 1999), opportunities for financial assistance (Nerad & Cerny, 1993; Brewer, et. al., 1999), and close social and academic interaction with fellow graduate students (Baird, 1992).

Since Isaac's study in 1993, researchers have begun to investigate graduate-level attrition and retention on a wider scale. Most notably, Bair and Haworth (1999) compiled findings on 118 research studies on doctoral attrition and retention conducted between 1970 and 1998.

These studies affirmed Isaac's assertion that no national databases exist on graduate attrition compared to completion because the studies utilized in their meta-synthesis focused on doctoral attrition at specific institutions. Their findings included: 1) attrition and persistence rates vary widely by field of study, and even more widely by program of study; 2) departmental culture affects doctoral student persistence; 3) difficulties with the dissertation relate to attrition; 4) academic achievement indicators, except for GRE scores, are not effective predictors of degree completion; 5) employment and financial factors are poor indicators of persistence; and, 6) retention rates vary widely among institutions.

Significance of the Study

Only a few institutions have published internal studies on doctoral attrition in educational administration programs (Lindle, 1998; Nagi, 1975; Pauley, Cunningham & Toth, 1999; Sigafus, 1998). Since Bair and Haworth (1999) found that retention rates vary widely by institution and it has been asserted that future directions for research should be focused at the departmental and program level (National Science Foundation, 1998), it is clear that institutional studies are needed. It is evident that results from other institutions cannot be generalized beyond their own campuses.

Pressure for greater accountability in higher education has already occurred at the undergraduate level with the passage of the Students Assistance General Provision Act (effective with the 1995 academic year). The act mandates the reporting of completion rates for undergraduates and will likely be extended to graduate education (National Science Foundation, 1998). Accountability requires the assessment of the quality and success of the institution's academic programs. Careful analysis of completion and attrition data will assist in institutional appraisal (Pauley, Cunningham, & Toth, 1999).

The expenses and encumbrances of a doctoral program are two-fold: on the individual student and on the institution. What are reasonable completion rates for doctoral programs? Should the 40-60 percent completion rates that Bair and Haworth (1999) reported become standards? If entrance to a doctoral program is highly selective, should completion rates be higher? Since completion rates vary widely by program, a related question is what the standard should be for individual programs. If a study has not been conducted to determine such a standard, is this an indication of lack of quality within the program? Should completion rates be increased? If completion rates are increased, is there a message that the quality of the program is reduced? Is attrition all bad? Some view a certain degree of attrition as a societal gain rather

than a loss (National Science Foundation, 1998). These and other questions may initially seem simple; however, those who have been involved in doctoral programs quickly discover such issues become complicated when the actual administration occurs.

Positions of leadership and power require professional school or graduate study (Hite, 1985). This is increasingly important in the United States. Educational communities that have a shortage of qualified candidates to fill positions face a growing need for faculty and administrators with doctoral credentials (National Research Service, 1998; Pauley, Cunningham, & Toth, 1999). In addition to a rigorous screening process for all applicants, an understanding of doctoral completion and attrition is an absolute necessity if institutions are serious about improving the quality of their programs and providing future educational leaders.

Research Design and Methodology

This study was conducted at a doctoral degree granting university with an average graduate enrollment of 2,600. The total subject pool in the study were 168 graduate students admitted to the doctoral program in educational administration for the years 1986-2000. Investigators chose the year 1986 because this was the first year that scores from the Graduate Record Examination, one of the independent variables examined here, were required for doctoral admission. Departmental admission requirements included a minimum of 3.20 grade point average on the Master's Degree and a combined score of 1000 on the verbal and quantitative portions of the GRE or a total score of 1500 on all subsections (these are preferable scores; however, students are admitted with a combined score of 1000 on any two of the subscales). Students who did not meet these minimum standards could be granted probationary admission and could be considered for full admission upon completion of 12 semester hours with a minimum 3.20 grade average. Of the total number admitted to doctoral study, sixteen students never began the program; thus, data were available for 152 students, 66 of whom have graduated, 54 have dropped out of the program, and 32 are still actively pursuing the degree.

The authors sought to investigate attrition, retention and program completion of these doctoral students and how best to determine at the time of admission which students are most likely to achieve success, i.e., degree conferral. Degree completion, the sole dependent variable in this study, is viewed as the most defensible and viable definition of success (Case & Richardson, 1990; Goldberg & Alliger, 1992; Holmes & Beishline, 1996; House & Johnson, 1993a; Isaac, 1993; Mitchelson & Hoy, 1984; Nelson, Nelson, & Malone, 2000; Pauley, Cunningham, & Toth, 1999; Williams & Harlow, 1970).

In order to determine which of the variables would predict successful completion of the Ed.D. degree, a backstep logistic regression model was utilized. This modeling process begins by including all predictor variables and then eliminating those variables that do not add significantly to the prediction of the dependent variable. In this study, the predictor variables were divided into two types: continuous and categorical. The continuous predictor variables included the following: 1) GRE verbal score (GREV); 2) GRE quantitative score (GREQ); 3) undergraduate GPA (UGPA); 4) Master's degree GPA (MGPA); and the total number of years that elapsed from the time the student finished the undergraduate degree to the time the student began the doctoral program. In addition to these variables, the GRE verbal score and the GRE quantitative score were combined conjunctively (in a model proposed by Einhorn, 1971) with the UGPA and the MGPA to produce the following variables: 1) GREV x UGPA; 2) GREQ x UGPA; 3) GREV x MGPA; 4) GREQ x MGPA. The GRE analytic score was not included in the regression analysis because a large number of students did not submit results from this portion of the examination.

The categorical predictor variables included the following: 1) gender; 2) the Carnegie Classification (baccalaureate, masters, doctoral, or research) of the institution from which the student received the undergraduate degree; 3) the Carnegie Classification of the institution from which the student received the master's degree; and 4) whether the student entered the doctoral program with the Ed.S. degree (a graduate specialist degree program that requires 30 semester hours beyond the master's degree; see page 9 for a full explanation) or received the Ed.S. degree while working on the doctoral program or never received the Ed.S. degree.

In order to use the categorical predictor variables, contrasts were utilized. The type of contrast employed was a deviation contrast where one category is selected and each of the other categories is compared with the selected category. For the variable representing the Carnegie Classification, a contrast matrix was established so that each undergraduate and graduate institution was compared with the doctoral granting institution. For the variable representing the Ed.S. degree, the categories of possessing the Ed.S. before starting the doctoral program, or obtaining the Ed.S. after enrolling in the doctoral program were compared with the category of not possessing the Ed.S. degree.

Regression analysis was used in this study rather Fisher's discriminant function because logistic regression is more appropriate when the subjects are being classified into just two groups. Another reason for utilizing regression analysis instead of the discriminant function is

that the latter assumes that the independent variables each have a distribution that is normal. Since some of the independent variables were categorical, e.g., the variables representing the type of institution from which the student earned the baccalaureate and masters' degrees, the academic areas of the undergraduate and graduate majors, and gender, it was deemed more appropriate to use logistic regression which is less sensitive to the restriction of normality.

The method used for the logistic regression was the log likelihood ratio method. The model was re-estimated by eliminating each variable one at a time. Variables that did not cause a change in the log likelihood ratio were eliminated from the model. This model is better than eliminating variables based on the Wald statistic (SPSS Reference Guide).

Results

As noted above, 66 of the 152 students who began the doctoral program in educational administration graduated. Thirty-two are actively pursuing the degree, but fifty-four (or 41.8%) dropped out. This dropout rate is comparable to studies over the last half century that showed an attrition rate of between forty and sixty percent (Bair & Haworth, 1999). Descriptive data are shown in Tables 1-5, and statistical results are presented in Tables 6-12.

Table 1

Descriptive Data on Students Who Started the Ed.D. Program in Educational Administration

Descriptor	All (n=152)	Males (n=91)	Females (n=61)
Undergraduate GPA	3.06	3.00	3.15
Master's GPA	3.70	3.67	3.74
Verbal GRE	521	522	520
Quantitative GRE	543	561	515
Analytical GRE*	532	541	518
Age at Admission	40.2	39.7	40.9
Years from BA to MA	3.0	3.3	2.7
Years from MA to Ed.D.	10.6	10.2	11.3
Years from BA to Ed.D.	16.8	16.1	17.7
Ed.S. Degree at Admission	33 (21.7%)	25 (30.8%)	8 (13.1%)
Ed.S. Degree after Admission	11 (7.2%)	8 (8.8%)	3 (4.9%)
Assistantships	24 (15.8%)	16 (17.6)	8 (13.1%)
Status in the Program			
Completed	66 (43.4%)	39 (42.8%)	27 (44.2%)
Active	32 (21.1%)	16 (16.6%)	16 (26.2%)
Inactive	54 (35.5%)	36 (39.5%)	18 (29.5%)

*Analytic scores were not available for all students.

Table 2

Degree Information of Students Who Started the Ed.D. Program in Educational Administration

Descriptor	All (n=152)	Males (n=91)	Females (n=61)
Bachelor's Degrees			
Baccalaureate Institution	21.1%	24.1%	16.4%
Master's Institution	22.4%	23.1%	21.3%
Doctoral Institution	34.8%	31.9%	39.3%
Research Institution	21.7%	20.9%	23.0%
Master's Degrees			
Baccalaureate Institution	1.3%	2.2%	-0-
Master's Institution	27.6%	27.5%	27.9%
Doctoral Institution	48.7%	46.1%	52.4%
Research Institution	21.7%	23.1%	19.7%
Other	.7%	1.1%	-0-

Table 3

Majors of Students Who Started the Ed.D. Program in Educational Administration

Descriptor	All (n=152)	Males (n=91)	Females (n=61)
Undergraduate Major			
Education	34.7%	25.8%	47.5%
Humanities/Arts	19.3%	20.2%	18.0%
Applied Sciences	11.3%	10.1%	13.1%
Business	10.7%	9.0%	13.1%
Social Sciences	9.3%	14.6%	1.6%
All Others	14.7%	20.3%	6.7%
Graduate Major			
Education	63.7%	62.9%	65.0%
Applied Sciences	8.7%	9.0%	8.3%
Business	8.1%	6.7%	10.0%
Physical Sciences	5.4%	7.9%	1.7%
Psychology	5.4%	3.4%	8.3%
All Others	8.7%	10.1%	6.7%
Ed.S. Major			
School Superintendency	70.5%	75.7%	54.5%
School Administration	9.1%	9.1%	9.1%
Curriculum	6.8%	-0-	27.3%
Education	6.8%	9.1%	-0-
All Others	13.6%	15.2%	9.3%

While the data presented in Tables 1-3 tend to be self-explanatory, a few general observations should be noted. GRE scores were higher for males than for females, but UGPA and MGPA were higher for females. Females were slightly older than males at the time of admission to the doctoral program but started the master's degree sooner in their academic careers. Females completed the doctoral program at a slightly higher percentage than males, and a higher percentage of females are still active in the program. The type of institution from which the baccalaureate degree was earned was fairly evenly dispersed among all four Carnegie Classifications, but the largest percentage of masters' degrees were earned at doctoral granting universities. And as would be expected, most of the students' undergraduate and graduate majors were in some field of education.

In regard to the Ed.S. degree, more males than females who entered the Ed.D. program either held the Ed.S. at the time they were admitted to the doctoral program or obtained the Ed.S. on the way to the doctorate. The Ed.S. degree is a graduate program that is designed to prepare school superintendents and is required for licensure in Indiana. The requirements for the program are planned with the master's program in educational administration in a linear sequence leading to the doctoral degree if the student chooses to continue.

Tables 4-5 compare the predictor variables between those who completed the doctoral program with those who did not.

Table 4

Comparison of Graduates and Non-Graduates

Measure	Graduates			Non-Graduates		
	All	Male (39)	Female (27)	All	Male (36)	Female (18)
UGPA	2.98	2.95	3.02	3.08	3.02	3.20
MA GPA	3.70	3.65	3.76	3.67	3.65	3.70
Verbal	531	525	540	525	524	526
Quantitative	544	545	542	577	595	482
Analytical	538	541	532	532	554	491
Age at Start	40.5	39.8	41.4	40.8	40.3	41.8
Final GGPA	3.90	3.88	3.92	3.81	3.80	3.82
Yrs from BA to MA	3.0	2.8	3.2	3.5	3.9	2.7
Yrs from MA to EdD	10.6	10.4	10.9	11.2	10.6	12.2
Yrs from BA to EdD	17.4	16.1	19.3	17.0	16.8	17.2
% With Asstships	70.0	61.5	85.7	30.0	8.3	14.3
Average Number of Hours Completed				24.4	24.7	23.9
% Passed Comps				20.3	27.7	5.6
% With Proposal				3.7	5.5	0.0
by Carnegie (BA)						
Bachelor's	65.4	66.6	62.5	34.6	33.3	37.5
Master's	64.0	58.8	75.0	36.0	41.2	25.0
Doctoral	41.9	37.5	47.4	58.1	62.5	52.6
Research	57.5	50.0	70.0	42.3	50.0	30.0
% by Carnegie (MA)						
Bachelor's	N/A	N/A	N/A	N/A	N/A	N/A
Master's	52.9	47.6	61.5	47.1	52.4	38.5
Doctoral	50.0	47.1	54.2	50.0	52.9	45.8
Research	66.7	63.2	75.0	33.3	36.8	25.0

Interesting differences are noted between graduates and non-graduates and between males and females. In the overall population some quantitative predictor variables (MGPA, GREV, GREA, Final GPA) were higher for students who completed the doctoral program than for those who did not; other quantitative predictor variables, however, were higher for the non-graduates compared to the graduates (UGPA, GREQ). Little difference was seen between these two groups concerning age at admission and time from the baccalaureate degree to admission to the doctoral program.

Table 5 displays differences between graduates and non-graduates for those students whose undergraduate grade point averages were below 2.75, the institutional minimum requirement for admission to a master's degree program.

Table 5

Comparison of Doctoral Students with < 2.75 UGPA (29)

	Graduated (17)			Did Not Graduate (12)		
	All	Males (11)	Females (6)	All	Males (8)	Females (4)
MA GPA	3.58	3.58	3.57	3.56	3.59	3.50
Verbal	508	519	487	507	529	463
Quantitative	545	531	572	554	610	443
Analytical	509	511	505	497	547	423
Age	42.7	42.7	42.7	40.7	42.9	36.3
Final GPA	3.89	3.88	3.91	3.71	3.70	3.72
MA to EdD	13.1	14.9	9.8	10.1	12.0	6.3
BA to MA	2.6	2.5	2.8	4.4	6.0	1.3
BA to EdD	19.6	18.5	21.5	16.6	19.4	11.8
# Hrs Completed				22.1	23.8	18.8
% Passed Comps				25.0%	25.0%	25.0%
% With Proposal				8.3%	12.5%	-0-

Of the 152 students who began the Ed.D. program, 34 had obtained their master's degree under this probationary status; five are still actively pursuing the degree. Of most interest, GRE scores varied considerably; they were higher for the male non-graduates and were notably lower for female non-graduates. For example, the difference in the quantitative and analytical GRE scores between female graduates and female non-graduates is approximately 130 and 80, respectively. Regarding age, females who did not graduate tended to be younger than

those who completed degree requirements. In addition, for both males and females, the final graduate grade point average was lower for the non-graduated group; however, completion of the dissertation probably influenced the final GGPA since "As" are usually the awarded grade.

The logistic regression data for the variables that remained in the equation that best predicted completion or non-completion of the doctoral degree are presented in Table 6.

Table 6

Logistic Regression Equation for Degree Completion

Variable	Beta	Significance rank
Ed.S. Degree (overall)		1
Contrast (degree after entering Ed.D. with not having Ed.S. degree)	1.83	1st significant contrast
Contrast (degree before entering Ed.D. with not having the Ed.S. degree)	-1.03	2nd significant contrast
Carnegie classification of undergrad. inst.		2
Contrast Baccalaureate with Doctoral	-.46	1st significant contrast
Contrast Masters with Doctoral	-.25	2nd significant contrast
Contrast Research with Doctoral	.07	3rd significant contrast
Master's Degree GPA	-1.39	3
Constant	3.61	

The independent variables that remained in the equation and thus served as important predictors were whether or not the student earned the Ed.S. degree, the Carnegie classification of the undergraduate institution, and the Master's degree grade point average. The best predictor was whether or not the student earned the Ed.S. degree.

The key statistical output in the analysis was the accuracy of predicting the percentage of students who completed or did not complete the doctoral degree. The highest prediction rate when the logistic regression analysis was used is shown in Table 7.

Table 7

Accuracy of the Logistic Regression Results for Predicting Program Completion or Non-Completion

		Predicted		
		Completed	Not Completed	Percentage Correct
Observed	Completed	53	13	80.03
	Not Completed	28	26	48.15
		Overall Percentage		65.83

As can be observed in Table 7, if the student completed the Ed.D. degree, the model correctly predicted completion with about 80% accuracy. However, the model was only 48% accurate in predicting that the student would not complete the degree. It may be surmised that other nonacademic factors, such as financial and/or familial, may have contributed to a student not being able to complete the program.

If the variable representing whether or not the student completed the Ed. S. degree is removed from the equation, then other variables remain in the prediction equation. These results are presented in Table 8 below.

Table 8

Logistic Regression Equation for Degree Completion Without Ed.S. Degree as a Variable

Variable	Beta	Significance rank
Carnegie classification of undergrad. inst.		1
Contrast Baccalaureate with Doctoral	-.37	1st significant contrast
Contrast Masters with Doctoral	-.24	2nd significant contrast
Contrast Research with Doctoral	-.02	3rd significant contrast
Undergraduate GPA	.58	2
GRE verbal x Masters GPA	-.21	3
Masters GPA	.32	4
Gender	.19	5
Constant	1.15	

Now the Carnegie classification of the undergraduate institution was the most predictive of degree completion. Other factors, too, became significant: UGPA, GRE verbal times the MGPA, and gender.

While the accuracy of prediction is not quite as high as including the factor representing completion of the Ed. S. degree, the results are similar. One may assume that the factors in Table 8 that were not present in Table 6 predict the status of the student with regard to the Ed. S. degree. The prediction results are displayed in Table 9 below.

Table 9

Accuracy of the Logistic Regression Results for Predicting Program Completion or Non-Completion Without the Ed.S. Degree as a Variable

		Predicted		
		Completed	Not Completed	Percentage Correct
Observed	Completed	50	16	75.76
	Not Completed	28	26	48.15
		Overall Percentage		63.16

The overall percentage of the accuracy of the logistic regression decreased slightly when the Ed.S. degree factor was removed, but the prediction of those who did not complete the Ed.D. in both tables, while low, remained constant. The prediction percentage was more accurate with the group who completed the doctoral program.

To investigate the relationship between completing or not completing the doctoral degree and whether the student came to the program with the Ed.S. degree, earned the Ed.S. degree while enrolled in the doctoral program, or never obtained the Ed.S. degree, the chi-square statistic was applied. Table 10 presents the contingency table for the relationship between obtaining the Ed.D. and the Ed.S. degrees.

Table 10

Contingency Table for Relationship Between Obtaining the Ed.D. and Ed.S.

	Ed.S. During Ed.D. Enrollment	No Ed.S.	Ed.S. Before Ed.D. Enrollment
Completed Ed.D.	**1** 5.5	**48** 45.1	**17** 15.4
Did not Complete Ed.D.	**9** 4.5	**34** 36.9	**11** 12.6

Numbers in bold represent the actual count. Numbers not in bold represent the expected frequency.

Chi-Square = 9.86; df = 2; significance (adjusted for cell frequency below 5) = .0072

The actual number of students who completed the doctoral degree and the Ed.S. degree while enrolled in the Ed.D. program was less than expected; however, the number of students who did not complete the Ed.D. degree but obtained the Ed.S. while enrolled in the program exceeded the expected number. The number of students who held the Ed.S. degree while enrolling in the doctoral program was about as expected.

A visual comparison of the final grade point average obtained either when the student obtained the doctoral degree or exited the program is presented in Table 11 below.

Table 11

Grade Point Average Obtained Either with the Ed.D. or When Dropped Out

	Ed.S. During Ed.D. Enrollment	No Ed.S.	Ed.S. Before Ed.D. Enrollment	All
Completed Ed.D.	3.95 (1)	3.91 (48)	3.86 (17)	3.90 (66)
Did not Completed Ed.D.	3.87 (9)	3.80 (34)	3.78 (11)	3.81 (54)

Differences in the final grade point average were analyzed by use of ANOVA. Results of the ANOVA are presented in Table 12.

Table 12

Analysis of Variance of Mean Graduate GPA

Source of Variance	Sum of Squares	DF	Mean Square	F	Significance of F
Ed.D.	.272	1	.272	13.36	.000
Ed.S.	.066	2	.033	1.630	.200
Ed.D. x Ed.S.	.005	2	.002	.118	.889
Error	2.320	119	.020		

The only factor that was significant for the grade point average was the attainment of the doctoral degree. No matter if or when the specialist degree was earned, the final GPA was higher for those who completed the doctoral degree than for those who dropped out.

Summary and Conclusions

The overall results of this study showed that the completion of the Ed.S. degree, the Carnegie Classification of the undergraduate institution, and the master's degree grade point average are useful in predicting doctoral degree completion in educational administration. Of these, the most significant predictor was conferral of the specialist degree. When the variable of the completion of the Ed.S. degree was removed from the regression equation, results differed somewhat from the overall findings. The most predictive factor of completion was the Carnegie Classification of the undergraduate institution followed in importance by UGPA, GRE verbal times MGPA, and gender. The overall prediction rate, however, dropped slightly when the specialist degree was eliminated from consideration.

The fact that UGPA was not statistically significant in the overall results but remained in the equation with the elimination of the specialist degree factor raises an interesting point. It is important to remember that most doctoral programs in educational administration are post-masters' requiring teaching and/or administrative experience as prerequisites for admission. Since admission to most doctoral programs is a process that begins after the Master's degree, it is rare that a student's undergraduate grade point average is considered as a variable. The results of this study suggest that UGPA is a variable that should be considered. Descriptive data showed that there were differences between the entire subject pool and the group whose UGPA was below the ordinary admission requirements. Ignoring completely this factor in admissions deliberations does not make practical sense.

Two of the six general findings of the meta-synthesis of Bair and Haworth (1999) were supported in this study. First, except for GRE scores (GREV times the MGPA) and UGPA, academic achievement indictors were not effective predictors of degree completion; and these variables were only minimally important. Second, attrition was also affected by difficulties with the dissertation. As reported in the literature there had been few previous attrition and retention studies of graduate students. This was true for the institution under current study. Table 4 showed that nearly 28% of the male students who dropped out had passed comprehensive examinations but just under 6% had a formal dissertation proposal approved. For females, the percentages were significantly lower (5.6% and 0%, respectively). Dissertation completion probably influenced the final grade point average.

When one wishes to predict which students are most likely to complete the doctoral program in educational administration, variables should be used in combination. Malone, Nelson, and Nelson (2001) found that predictive rates for completion of the master's degree in educational administration increased when the admission factors were used conjunctively. The

current study mirrored those results in that no single variable should be used to determine who should be allowed to begin doctoral study.

Investigators suggest that additional study should focus on non-quantitative factors to determine the quality of the doctoral program and to assess why students with appropriate admissions credentials fail to persist to degree completion. Additional study should include input from all stakeholders, e.g., faculty, students, and institutional representatives who are responsible for monitoring cost analysis features of the program.

The current emphasis on raising standards for educational programs entails a need for more in depth understanding of students who have entered and/or completed programs, i.e., success of graduates, types of positions held by graduates, numbers completing the programs, and numbers enrolled for program sustainability.

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